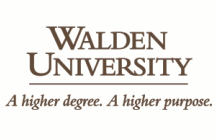

2018

Staff Educational Program to Prevent Medication Errors

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This is to certify that the doctoral study by

Rita Chinyere Hawthorne-Kanife

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Walden University
2018

Abstract

Staff Educational Program to Prevent Medication Errors

by

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BSN, Prairie View A & M University, 2003

MSN/MSHA, University of Phoenix, 2008

FNP Post Graduate Certificate, South University, 2017

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

August 2018

Abstract

Medication administration errors (MAEs) may lead to adverse drug events, patient morbidity, prolonged hospital stays, and increased readmission rates, and may contribute to major financial losses for the health system. MAEs are the most common type of error occurring within the health care setting leading to an estimated 7,000 patient deaths every year. Interventions have been designed to prevent MAEs including education for nurses who administer medications; however, little effort has been made to design systematic educational programs that are based on local needs and contexts. The purpose of this project was to identify internal and external factors related to MAEs at the practice site, develop an education program tailored to the factors contributing to MAEs, and implement the program using a pretest posttest design. The Iowa model was used to guide the project. The 26 nurse participants who responded to an initial survey indicated that nurses felt distractions and interruptions during medication administration, and hesitancy to ask for help or to report medication errors increased MAE risks. After the education program, the pretest and posttest results were analyzed and revealed improvement in knowledge and confidence of medication administration (M = 3.2 pre, M = 3.7 post, $p < .05$). Open-ended question responses suggested a need for dedicated time for preparation and administration of medications without interruptions. Positive social change is possible as nurses become knowledgeable and confident about medication administration safety and as patients are protected from injury secondary to MAEs.

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Dedication

To the memory of my beloved and wonderful parents - Gilbert Okpomeshine Nzeocha and Theresa Omongu Nzeocha. Your exceptional guidance, inspiration and motivation will forever be cherished.

To my sweet, affectionate, and caring husband, John Chidi Kanife Jr., and my dear children. Words are insufficient to express my gratitude for your unparalleled love, support, and sacrifice during this Doctoral program. You were the force that kept me sailing.

And, to Almighty God who gave me the strength and tenacity to "soldier on" and complete this academic program, thank you.

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Similarly, my gratitude also goes to all of my clinical preceptors Molly Paul, NP, Simon Omana, NP, Dr. Uchenna Nworah, NP, Chidi Obinani, NP, Agnes Anyalebechi, NP, Freda Ekpa, NP, Dr. Ifeyinwa Onwudiwe, Alvin Mena Cantero, NP, and my unit manager Althea Phillips-Edwards. I will use the cumulative knowledge gained from your preceptorship for the greater good of humankind. I must not fail to mention my "heaven-sent" husband, John Chidi Kanife Jr., for his sacrifice and support during this academic journey. I wonder who would have better taken care of the children and the home front if you were not present.

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Section 1: Overview of the Project

Introduction

Medication errors are a common phenomenon within hospital and clinical settings. Medication errors may lead to various adverse drug events, increased readmission rates, and prolonged patient stays in the hospital (Berdot et al., 2016; Blignaut, Coetzee, Klopper, & Ellis, 2017; Vrbnjak, Denieffe, O'Gorman, & Pajnkihar, 2016). The medication process consists of three main stages (prescription, delivery, and administration). All three stages are prone to human error (Dubovi, Levy, & Dagan, 2017; Strickler et al., 2016; Vrbnjak et al., 2016). However, it is essential to highlight the prevalence of medication errors occurring at the administration stage (over 33% of the cases) and is the least researched within evidence-based literature (Berdot et al., 2016). One of the most important functions for which registered nurses (RNs) are responsible is the administration of medication (Booth, Sinclair, Brennan, & Strudwick, 2017). By definition, medication administration errors (MAEs) are deviations from the provided medication order (Berdot et al., 2016). Reducing the number of errors associated with medication administration has become an important issue when improving nurse service quality (Vrbnjak et al., 2016). In fact, MAEs are the most common type of errors occurring within the healthcare setting, which annually lead to an estimated 7,000 patient deaths every year (Gonzales, 2010).

At the same time, as pointed out by Blignaut et al. (2017), new RNs commonly reported inadequate training and educational preparation for safe medication administration. New RNs are particularly vulnerable to medication errors (Dubovi et al.,

2017). There is a need for evidence-based practice applications to identify effective teaching interventions that can help nurses develop the skills required to meet the challenges of the clinical workplace (Dubovi et al., 2017; Gonzales, 2010; Strickler et al., 2016). Finally, traditional methods to educate nurses about medication administration safety remain a core technique used to address medication administration safety (Härkänen, Voutilainen, Turunen, & Vehviläinen-Julkunen, 2016). Nurse educators should consider developing holistic and comprehensive tools that can provide nurses with the necessary knowledge, experience, and attitudes needed to minimize incidences of medication administration-related errors (Gonzales, 2010).

The aim of my Doctor of Nursing Practice (DNP) project was to develop an educational program for staff nurses that would help them understand issues related to MAEs, error-reporting approaches, and possible individual and organization-wide techniques. These techniques help to mitigate errors. My project showed it was possible to improve outcomes that would lead to positive social change among nurses and practitioners. The expected measurable project outcome included the results of a pretest and a posttest. The results demonstrated that training increased nurses` knowledge concerning medication administration, error sources, and prevention techniques.

Problem Statement

MAEs are the most common types of errors occurring within the healthcare setting. These errors annually lead to an estimated 7,000 patient deaths every year (Gonzales, 2010). Hospitals are actively implementing organization-wide interventions targeting reduction of MAEs to reduce this threat to patient safety in the health system.

Developing and delivering an education program based on the most recent evidence for preventing medication errors is an effective method to reduce MAEs (Vrbnjak et al., 2016). New RNs commonly report inadequate training and educational preparation for safe medication administration (Blignaut et al., 2017). Consequently, it is important to identify ways to address the problem. While education programs are not new to nursing, there is a need to provide education as often as necessary. It is necessary to document that nurses understand how to implement what they have been taught. In the clinical setting where intervention took place, it was important to get the information out to nurses in such a way that they understood the need to adhere to specific protocols of medication administration and error prevention.

Significance to the Field of Nursing Practice

The interventions included providing staff nurses and nurse practitioners with the necessary knowledge to provide safe medication administration to their patients. The outcome was achieved by developing and using a comprehensive and ready-to-apply educational program for nurses working in a clinical healthcare setting. It was important to highlight that the educational program developed could be applied not only to new nurses. The program could also be useful for RNs who are actively engaged in practical work. The latter group can benefit from improving their current level of education about drug administration safety and help develop a necessary level of self-esteem needed for effective professional performance in a challenging environment, such as nurse practice (Mettiäinen, Luojus, Salminen, & Koivula, 2014).

Purpose

The purpose of my project was to identify internal and external factors most relevant to nurse medication administration errors at the clinical practice site and to develop and provide an educational program for nurses.

In the clinic setting, where the intervention took place, there was no comprehensive educational program for the nursing staff to improve the quality of medication administration and reduce associated errors. Continuing education for nurses can help address the gaps currently existing in nursing practice settings (Booth et al., 2017). Continuing education can assist with the development of an effective focus on service quality and patient safety.

Project guidance relied on the following practice-focused question: Does an evidence-based practice education program on medication administration safety and error prevention improve a nurse's knowledge of medication safety and error prevention?

The question highlights an information gap that was addressed through the review of the literature which provided evidence that holistic and systematic education-based efforts promote safe medication administration among nursing staff. This can help to improve the performance of RNs, and as a result—patient health outcomes (Berdot et al., 2016; Booth et al., 2017; Dubovi et al., 2017). In fact, the latter is rarely implemented within the context of healthcare organizations (Mettiäinen et al., 2014). The implemented measures are often reactive in nature (addressed specific incidents as opposed to being directed to prevent future ones). These measures focus on a single component of nursing practice (e.g., calculations, medication preparation) (Gonzales,

2010; Mettiäinen et al., 2014). In addition, these sporadic methods are not tailored to the specific needs of a healthcare institution in focus, but rather concern general practices and techniques of medication administration (Mettiäinen et al., 2014). My project bridged the identified gap in the following way.

Through review of the literature, the project question helped to identify risk factors that would negatively affect medication administration safety. The project's question was provided guidance for literature review, the development of an evidence-based practice, comprehensive educational program for nurses, and the corresponding pre and post test used in the project.

Nature of Doctoral Project

My doctoral project was an evidence-based learning intervention based on published evidence about medication administration safety and error prevention. The information was the basis for developing an education program for a specific clinical setting. I used the Iowa Model to develop the education program. The Iowa Model is an appropriate framework to help identify effective educational interventions. These interventions must be effective when combating identified human errors. They must also help determine techniques that can be successfully integrated into the daily processes and routines of RNs and consequently *stick* to professional practices in the long term. Consequently, the Iowa Model was an appropriate theoretical framework to guide the education program development. I reviewed scientific evidence (peer-reviewed empirical and theoretical works) which helped develop the specific educational program. This part of the project was based on the use of secondary data sources. Section 3 includes additional details about the project.

Booth et al. (2017) made an important point according to which each specific healthcare setting has a specific effect on an individual nurse practice due to the established procedures, work culture, and environment. The project's final stage concerned evaluation and assessment of the effectiveness of the developed educational intervention. The objective of the intervention was to help nurses develop the knowledge and skills for the safe administration of medication. To achieve the established objective, the group of nurses administered a survey designed by Gonzales (2010) especially for testing the effectiveness of nurse-led educational intervention.

The purpose of my project was to identify internal and external factors most relevant to nurse medication administration errors within the chosen healthcare context; to develop an effective educational program for nurses; and to test the effectiveness of the developed and implemented program. Project success was validated by quantitative pretesting and posttesting.

Significance

My project provided benefits and potential benefits to two major groups of stakeholders. First, all patients comprise a key stakeholder category. Sears, O'Brien-Pallas, Stevens, and Murphy (2016) pointed out that MAEs result in high mortality and morbidity rates, therefore compromising patient safety and health outcomes. Second, staff nurses comprise the other important group that benefited from the educational intervention. The intervention aimed to enhance their knowledge and their level of preparedness toward reducing possible human errors associated with medication administration, consequently enhancing their professional competency.

Contribution to Nursing Practice

In the literature review, several studies and reports suggested an overall high prevalence of injuries and other negative health-associated consequences. This negative situation is the result of healthcare workers who do not possess sufficient knowledge, skills, and attitudes (KSAs) to ensure safe medication administration (Dubovi et al., 2017; Gonzales, 2010; Härkänen et al., 2016). Within the studied local context, no significant effort was dedicated to solving the identified problem. Various learning approaches have been discussed within the context of improving educational outcomes of nurses, e-learning, experiential learning, and so forth (Dubovi et al., 2017; Härkänen et al., 2016). The existing evidence suggested integrating such activities and approaches into the traditional curriculum of nurse education to enhance the outcome of care (Härkänen et al., 2016).

Transferability of the Doctoral Project

It is important to highlight that my project approach may apply only to the area in focus, that is, the administration of medication by RNs. The project's results may not transfer to other important areas of nursing practice. Dubovi et al. (2017) pointed out that RNs often either receive insufficient training during their education or stop studying and gaining insight into the state-of-the-art evidence-based research at some point during their career. Dubovi et al. argued for the importance of holistic educational interventions at any point in the nursing career. For instance, context- and evidence-based educational programs may not only enhance professional performance of nurses via improvement of their KSAs, but also help address other issues relevant to their profession, for example, burnout and compassion fatigue (Berger, Polivka, Smoot, & Owens, 2015). Berger et al. (2015) pointed out that education-based interventions can significantly reduce various negative consequences associated with the nursing profession by increasing awareness, resilience, and strengthening knowledge of the latter.

Positive Social Change

The results suggest my project can serve as a trigger for positive social change. Dubovi et al. (2017) explained that the DNP's key role is bridging the gap between theoretical knowledge and evidence-based research on the one hand, and practicing nurse professionals, on the other. DNPs can act as agents that stimulate education and knowledge-sharing among individual RNs and their teams. Project results demonstrate that the process of learning and systematic education (including organization-led interventions and self-learning) are relevant to the nursing practice at any point of their

career not only at the beginning, but also at later stages as experienced RNs. My project showed the importance of a patient-centered approach and safety as a pivotal component of nurse practice. The project significantly enhanced the level of safety during medication administration by the nursing staff. According to Dubovi et al. (2017), there exists a stigma in association with human error in general and errors when administering medication in particular. According to such a viewpoint and stigma, human error should be reprimanded and viewed as the result of individual underperformance (Berdot et al., 2016; Blignaut et al., 2017; Härkänen et al., 2016; Vrbnjak et al., 2016).

To the contrary, Dubovi et al. (2017) suggested that human error does not emerge due to individual mistakes made by nurses. Human error is often the result of an organization-wide failure to ensure safety and knowledge-based work culture to reduce incidents of those human errors. The positive social change envisioned by my project concerns battling the existing stigma associated with errors during medication administration. Such errors are regarded as an inevitable part of nurses` performance. My project showed that the combination of individual and institutional efforts can enhance the discussed aspect of nurses` performance and mitigate risks of human error.

Summary

Human error during medication administration is a serious healthcare problem, leading to over 7,000 deaths annually. While multiple approaches have been suggested (e.g., organization-wide interventions, focus on building safety-oriented work environment), little effort has been dedicated to educating practicing nurses about possible causes and preventive strategies. My project bridged the gap between existing

evidence and the importance of systematic education and the negative consequences of errors while administering medication. The project also focused on bridging the theory with the specific chosen context—internal and external challenges experienced by RNs when administering medication within the clinic setting. Focus on such context helped to design the most effective holistic educational approach to increase knowledge of nurses regarding medication administration and to enhance their self-confidence about their relevant skills. My project resulted in outcomes that may promote positive social change within nursing practice. While the specific local context and nurse practices were specific to the project, the project was also based on a relevant underlying theoretical framework that included the Iowa Model of Evidence Based Practice. The following section is a comprehensive overview of the key theoretical bases for the project.

Section 2: Background and Context

Introduction

Medication errors are a highly common phenomenon within hospitals and clinical settings. Medication errors which may lead to various adverse drug events, increased readmission rates, and prolonged patient stays in the hospital (Berdot et al., 2016; Blignaut et al., 2017; Vrbnjak et al., 2016). A medication process consists of three main stages (prescription, delivery, and administration), with all three being prone to human error (Dubovi et al., 2017; Strickler et al., 2016; Vrbnjak et al., 2016). However, it is important to highlight the prevalence of medication errors occurring at the administration stage (over 33% of the cases). Medication errors are among the least researched topics within evidence-based literature (Berdot et al., 2016). Administration of medication can be described as one of the most important functions RNs are responsible for (Booth et al., 2017).

MAEs are the most common type of error occurring within the healthcare setting, which annually leads to an estimated 7,000 patient deaths every year (Gonzales, 2010). In the practice setting where this project took place, there was a lack of comprehensive educational programs available for the nursing staff to improve the quality of medication administration and to reduce associated errors. Continuing education for nurses can help address the gaps currently existing in nursing practice settings (Booth et al., 2017) and can assist with the development of an effective focus on service quality and patient safety. An objective of my project was to develop strategies for an education program that could be used to teach nurses safe medication administration and to implement the educational program and assess its effectiveness in producing knowledge improvement.

The basis for my project is the following practice-focused question: Does an evidence-based practice education program on medication administration safety and error prevention improve nurses' knowledge of medication safety and error prevention? This section includes concepts, models, and theories that are relevant to the nursing practice, the context of the local background, the role of the DNP, and a summary.

Concepts, Models, and Theories

Some of the key concepts that are relevant to the scope of my project included: risk management programs, occurrence, occurrence reporting, error, near miss, and hazardous events. A risk management program is an intervention aimed at identifying risks of harm or injury to patients, medical staff, and the development and implementation of strategies to reduce and mitigate such risks in the future (Berdot et al., 2016; Blignaut et al., 2017; Vrbnjak et al., 2016). I adopted a point of view acknowledging that human error is an inevitable threat, and consequently, while it is not possible to eliminate it among the nursing staff, efforts should be made to reduce its occurrence (Vrbnjak et al., 2016). Human error can be reduced by developing an effective risk management program built around an occurrence reporting system. An occurrence reporting system can be defined as a systematic effort aimed at the analysis of current safety conditions that may contribute to patient injury. The concept is relevant to the project because it is necessary to monitor frequency and degree of occurrences to determine the effectiveness of the intervention. Consequently, it is possible to identify opportunities to improve the quality of provided care. Three key types of occurrences were considered within the

scope of the project as possible sources of medication administration issues: errors, near misses, and hazardous conditions.

I adopted the following definition of error: an act initiated by the nurse that can refer to either conducting what should not have been done or fail to perform a certain act that was needed for safety reasons (Strickler et al., 2016). A near miss refers to a specific act or event that was noticed in time and therefore did not result in harmful consequences. However, the reoccurrence of such events presents a significant threat to the health facility (Vrbnjak et al., 2016). Finally, a hazardous condition can be defined as a set of circumstances that may contribute to an increased risk of a negative outcome (harm or injury) (Sears et al., 2016).

Blignaut et al. (2017) explained that human errors are regarded as the most common source of MAEs and originate from complex processes and systems of practices established within a hospital setting. Communication problems have been demonstrated to contribute to human error (Sears et al., 2016). Such issues may arise between healthcare providers, nurses, patients, and so forth (Blignaut et al., 2017; Booth et al., 2017). Another common source of errors stems from problems associated with the physician`s orders (e.g., illegible handwriting, use of unapproved abbreviations, or incomplete medical orders) (Hung, Chu, Lee, & Hsiao, 2016). Nurse experience and expertise is the key group of factors that can help minimize the incidence of deviations from the approved policies and procedures about medication administration (Blignaut et al., 2017). Related to the previous group of factors is lack of knowledge by the RN of basic pharmacology or the inability to perform the calculations which may lead to

administration errors and compromise the patient`s safety and health (Booth et al., 2017).

RNs often work in an environment where multiple distractions and situations arise that require their immediate attention or reaction (Sears et al., 2016). Such distractions and interruptions inevitably lead to loss of focus, which consequently contribute to nurse-related MAEs (Blignaut et al., 2017). Personal neglect is an important concept relevant to the chosen issue of medication administration error. According to Karavasiliadou and Athanasakis (2014), personal neglect can be manifested by preparing prescribed medication in advance or multitasking during the preparation stage, which negatively affects a nurse`s accuracy and concentration, leading to an increased risk of medication administration error (Booth et al., 2017).

In line with such considerations, it is important to adopt a framework that addresses the role of human error, its persistence, and the attitude toward it. According to Barnsteiner et al. (2014), modern healthcare traditionally adopts a punitive approach toward human error. However, such an approach is contradictory to workplace psychological safety and may negatively affect the propensity of the staff to report medical errors, consequently preventing an organization from developing an honest and transparent culture (Sears et al., 2016). The latter can ensure that nurses perform their tasks free of fear of being reprimanded for medical error. It also ensures that people who report various safety issues are not stigmatized, but instead rewarded (Booth et al., 2017). The latter is particularly important because it makes it possible to address the identified issues and fix them (Sears et al., 2016). It has been suggested that it is impossible to

"change the human condition, but we can change the conditions under which humans work" (Reason, 2000, p. 769). In line with such an argument, Barnsteiner and Disch (2012) advocated for the importance of changing the paradigm from the focus on identifying who has made an error toward understanding *why* something went wrong. The answer to the second question can help develop effective interventions to enhance patient safety by decreasing the incidence of MAEs.

The Iowa Model (Figure 1) is an appropriate framework to help identify educational interventions that are not only the most effective in combating the identified human errors, but also to help determine which of several techniques can be successfully integrated into the daily processes and routines of RNs and stick to professional practices in the long-term. The project adopted the Iowa Model of Evidence-Based Practice to Promote Quality Care, a framework commonly used within evidence-based practice. The discussed model is based on a theory of diffusion of innovations (Rogers, 2003). The theory can be viewed as a framework that helps nurses incorporate the most effective and state-of-the-art techniques and practices into their daily operations (Hiller, Farrington, Forman, McNulty, & Cullen (2017).

The Iowa Model has ten key components: (a) problem identification, (b) determination of a plan, (c) forming an effective team, (d) assessing evidence, (e) critical analysis of the accumulated evidence, (f) establishing validity and reliability of the obtained evidence, (g) running a pilot change-oriented project, (h) establishing whether a proposed change is appropriate for a project, (i) results implementation, and (j) generalization of the obtained results to target a wider population (Hiller et al., 2017).

The rationale for the adoption of the Iowa Model within the scope of the project was that the framework encompassed specific identifiable steps. Identified steps help to critically evaluate the effectiveness and the applicability of an intervention (an educational program for nursing staff) before the recommendation to apply the change-oriented intervention in healthcare institutions. The Iowa framework is an appropriate model designed for action-oriented learning processes (Hiller et al., 2017).

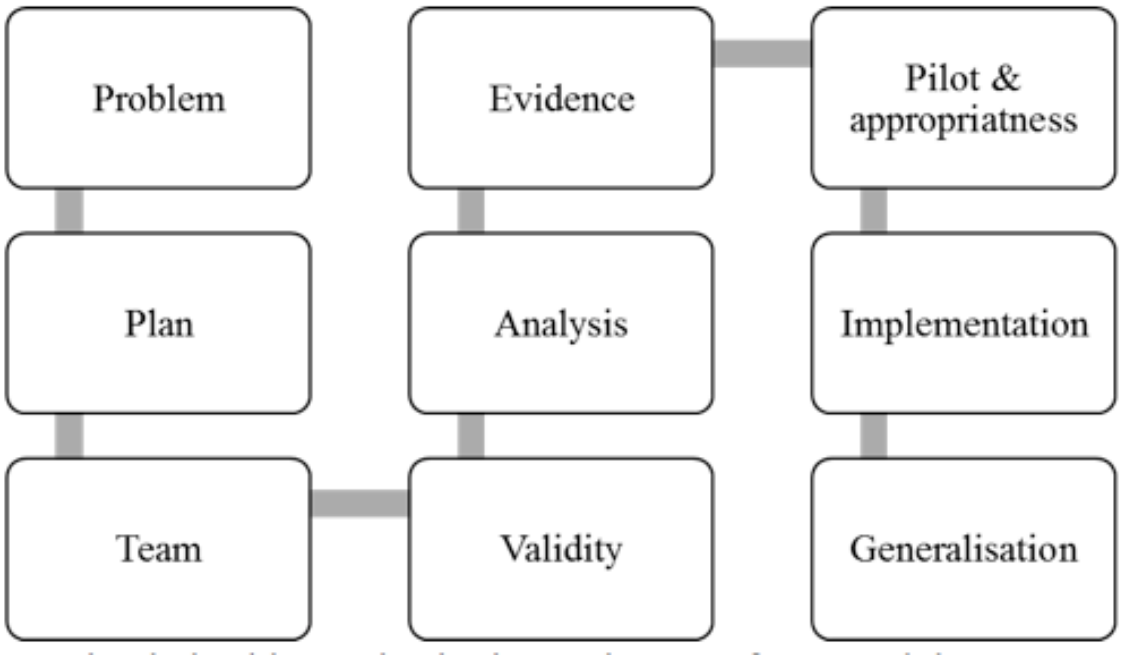

Figure 1. Iowa Model: Framework for the project.

Another theoretical framework adopted for the project was one based on Patient Risk Detection Theory. Desping, Scot-Cawiezell, and Rouder (2010) characterize this model as a multi-paradigmatic framework that focuses on various organization and individual attributes that may affect a nurse`s ability to make a sound judgment whether the health and life of a patient may be at risk. According to the model, nurses via their professional experience and years of practice develop signal sensitivity that allows them

to correctly identify the risk factors and overall patient risk which can be regarded as a learned process. The formation of signal sensitivity is a complex process that is affected by both organizational and internal factors (Despins et al., 2010). Nurses` levels of education and cognitive skills can be considered as some of the most relevant internal factors that predetermine signal sensitivity. On the other hand, organizational factors (e.g., culture based on safety and knowledge exchange) also influence the process (Berdot et al., 2016). The theory focuses on various stimuli used by individual nurses to differentiate risk signals from background noise (Berdot et al., 2016). Within the context of my project, the key aspect of Patient Risk Detection Theory is that the formation of nurses` signal sensitivity is a continuous process that can be enhanced externally (e.g., via an educational intervention program).

My project's premise is that it is impossible to achieve 100% human error-free medication administration. However, it is possible to reduce the error rate and to equip nurses with training and knowledge to enhance their signal sensitivity about possible signals and risk factors that would help address the problem that has already occurred. My project was both reactive and proactive in nature. The proactive part prevented errors during medication administration. The reactive part helped nurses combat the negative consequences of such errors.

In addition to the analysis of concepts and theoretical models relevant to the scope of the project, it was also important to investigate the relevant terminology. One key term essential to the project is *educator*, by which is meant any person (a professional teacher or a volunteer), who provides an individual (nurse) with information and

knowledge regarding the chosen area of practice (Berdot et al., 2016; Gonzales, 2010). For this project, I (the DNP student) was the educator. An educational intervention is a single technique adopted by an educator to transfer knowledge to the recipient (e.g., lecture, e-learning tool, PowerPoint Presentation) (Gonzales, 2010; Hiller, Farrington, Forman, McNulty, & Cullen, 2017; Strickler et al., 2016). An educational program is a systematically implemented strategy to educate a nurse and consists of at least two specific educational interventions (e.g., lectures and self-learning).

Relevance to Nursing Practice

My project contributed to the theoretical body of knowledge and also bridged the existing gap between evidence-based literature and nursing practice. Gonzales (2010) pointed out that nurses with little or no practical experience of patient care (shortly after their graduation) experience many uncertainties when performing their duties, particularly when administrating medication. Such uncertainties, along with a lack of solid theoretical knowledge and practical experience, contribute significantly to the occurrence of human errors during medication administration (Booth et al., 2017). Several different educational interventions have been developed to address the existing problem (Dubovi et al., 2017; Härkänen et al., 2016; Mettiäinen et al., 2014).

According to Härkänen et al. (2014), until very recently, most of the strategies adopted to reduce medication administration-related errors were concerned with the technological and work design aspects (e.g., introducing bar-code technology in medication storage rooms). The pitfall of such an approach is that it is rather slow and does not help address human-related sources of errors (Hiller et al., 2017; Hung et al.,

2016). Strategies directed at improving nurses' KSAs were developed (Schneider et al., 2006). According to Härkänen et al. (2014), MAEs should be characterized as a product of multiple factors, including, but not limited to, organizational and system characteristics, personnel training, policies, availability of resources, the presence of distractions, as well as difficulty level, and complexity of patient-care procedures. According to Mettiäinen et al. (2014) and Härkänen et al. (2014), multiple techniques and approaches to educate nurses are being used. The educational interventions aimed at reducing the MAE rate varies significantly in complexity, media, and nature (Härkänen et al., 2016). For example, many healthcare institutions use posters and distribute information leaflets among the nursing staff (Abbasinazari et al., 2012). Such simple and relatively inexpensive interventions are often replaced by alternative more targeted systematic approaches. For example, Xu, Li, Ye, and Lu (2014) argued for the importance of a five-point management intervention to reduce MAEs, which not only targets the lack of knowledge among the RNs but also looks at the underlying causes of problems and errors and discusses managerial implications for nurse teams.

Härkänen et al. (2014) discussed the relevance and effectiveness of specifically designed learning courses used to educate nurses (e.g., a three-month educational course that includes both lectures and self-assessments, as well as 20 pages of educational materials for distribution among the staff). Hung et al. (2016) pointed out that traditional educational intervention should be complemented by, if not replaced by, more innovative and efficient solutions, such as e-learning programs to reduce MAEs.

Mettiäinen et al. (2014) conducted an empirical quantitative study. Mettiäinen et al. found that the vast majority of the Finnish nursing staff lacked appropriate competences in pharmacology, medical calculations, and prescriptions, consequently being prone to conduct MAEs during their practice. To address the problem, 192 of the Finnish study, the nurses were offered a web-based educational course, aiming to enhance their knowledge of relevant areas. According to the obtained results, even a short (eight- hour) course was sufficient to significantly improve self-assessed knowledge of medication administration principles among the studied population (Mettiäinen et al., 2014). Dubovi et al. (2017) confirmed the findings that many nurses lack vital knowledge concerning medication administration safety. In an empirical study, Dubovi et al. (2017) aimed to create an easy-to-use and effective method to teach nurses the necessary skills.

Researchers looked at the effectiveness of Pharmacology Inter-Leaved Learning Virtual Reality (PILL-VR) computer simulation program, as a promising technique to be integrated into nursing education to enhance procedures related to medication administration (Berdot et al., 2016; Blignaut et al., 2017; Dubovi et al., 2017; Vrbnjak et al., 2016). Mettiäinen et al. (2014) conducted a randomized control trial made up of a PILL-VR group, a control group (lectures only), and a lecture-based curriculum group. The trial involved a total of 169 participants and helped compare the effectiveness of various teaching methods used to educate nurses. According to Dubovi et al. (2017), the computer-based simulation program rendered significantly higher learning outcomes for the nurses. However, Mettiäinen et al. (2014) pointed out that although computer

simulations and e-learning are gradually becoming an integral part of nurse education, such a group of approaches is also associated with numerous pitfalls. For example, to enhance knowledge acquisition, nurses during traditional lectures and assignments receive constant feedback from their tutors (Härkänen et al., 2016). Dubovi et al. (2017) supported the effectiveness of such feedback and argued that a constant feedback loop should be maintained during simulation and e-learning exercises as well.

In addition to the interventions previously discussed, other techniques and educational programs have been developed to help nurses and RNs reduce the MAE rate and to enhance their confidence and self-assurance about their KSAs. For example, Xu et al. (2014) discussed a CD-ROM-based nurse program and videotaped simulation. Despite the variety of methods and techniques that have been adopted to address the problem of errors during medication administration, the key element of an intervention remains testing its effectiveness by using surveys, self-assessments, or even observing nurses or nurse practitioners perform their duties (Dubovi et al., 2017).

My project addressed such problems, developed a short but comprehensive educational program for nurses, and tested the obtained knowledge to determine its effectiveness. Importantly, learning materials and topics discussed during the educational program were based on evidence collected within the specific clinical setting. As a result, the program was relevant to the nursing practice because it provided nurses with evidence-based learning tools. These tools helped to enhance the nurses' knowledge and reduced their fear and anxiety. The program focused on a specific clinical setting to identify the most common factors contributing to human error during medication administration.

Local Background and Context

The practice setting was the chosen healthcare institution (clinic). This institution was the source of the collected empirical evidence. Within the scope of the clinic, there existed a problem of MAEs. Reportedly, MAEs have not decreased over the years. For example, during 2015–2016, these errors resulted in a financial loss of more than 226,000 USD. The mission of the clinic is to provide each patient with the highest quality care tailored to his or her specific needs and to bring comfort to the patient`s family and relatives. The clinic has also declared its commitment to the principles of patient-centered care. However, the high MAE rate is one of the problems that is preventing the clinic from realizing its goal of organizational excellence.

The clinic employed approximately 40 RNs. The RNs varied greatly regarding their demographics and years of professional experience. According to the most recent data, over 40% of the nurses were newly graduated (within the last two years). My project showed that the discussed educational intervention might be highly beneficial for the specific healthcare organization because it would allow improved knowledge and confidence of nurses with relatively less experience. Within the context of the clinic, the educational interventions targeting reduction of MAEs were only represented by wall posters. No specific systematic efforts had been made to address the situation at hand and to change it.

Role of the DNP Student

In line with the argument by Vrbnjak et al. (2016), I believe that DNP-prepared nurses possess unique capabilities and roles in linking the state-of-the-art healthcare

practices and interventions with daily hospital and clinical practices. However, according to Booth et al. (2017), the gap between evidence-based knowledge, practical setting, and patient care is not always addressed. Multiple reasons prevent the nursing staff from assessing relevant information, and, most importantly, making this information a part of the staff's daily reference and practice. My extensive experience of working as an RN has provided me with an opportunity to witness such a gap between evidence-based knowledge and practice in real life. My key motivation to conduct the project was that DNP nurses should be viewed as sources of initiative and leadership within healthcare settings, as we possess the unique theoretical knowledge and extensive practical experience to bridge existing gaps in practice.

There is one possible bias relevant to my involvement in the project. I am convinced that educational intervention should have a significant positive effect on nurse performance related to medication administration. However, it was still a crucial part of the project to test this assumption and to provide a solid quantitative basis to support it. To address such a source of possible bias, I used carefully planned methods and reliable instruments to quantify the effect of educational intervention on nurses' ability to administer medication safely.

Summary

My project employed relevant concepts, and models to address the practice focused question which was to develop an effective comprehensive educational program for nurses to reduce MAEs. Although the study was based on the use of primary data, it utilized materials developed to assist nurses in their evidence-oriented studies (e.g., the

Iowa Model). However, the primary focus of the work was the collection of evidence from real-life nursing practice. The specific methodologies, procedures, participant population, and other relevant issues are described in great detail in the following section.

Section 3: Collection and Analysis of Evidence

Introduction

A major objective of the project was to develop an educational nurse-led intervention to enhance medication administration-related knowledge and skills among nurses. My project achieved this objective by identifying organization-specific sources of MAEs, developing an educational intervention based on the gathered primary and secondary data, as well as implementing and testing the intervention among the population of nurses by using reliable tools. I used theoretical knowledge (models, concepts, and evidence-based research) combined with practical findings (gathered via surveys and in-depth interviews) to understand how current medication administration practices could be improved and enhanced within the clinical intervention site.

This section is an overview of the established practice-focused question, sources of evidence collected within the scope of the project. The overview includes the specific methods related to population selection; the data collection; and the analysis- and synthesis-related processes. Important issues discussed in this section include the concerns and approaches adopted to protect the identity of the staff nurses who agreed to take part in the project.

Practice-Focused Question

The basis for the project is the following practice-focused question: Does an evidence-based practice education program on medication administration safety and error prevention improve nurses' knowledge of medication safety and error prevention?

Sources of Evidence

An extensive search was conducted using the following scientific databases to identify relevant scholarly peer-reviewed sources of evidence: EBSCO HOST, PubMed, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Cochrane, and Medline. The following key terms and their combinations were used to retrieve the relevant publications: *educational programs nursing, medication administration, medication administration errors, medication administration programs, nurses,* and *patient medication administration.*

The project utilized primary studies published during the five-year period 2012–2017 to collect evidence concerning the best practices to enhance nurses` knowledge of safe medication administration. This five-year period assured the project would only consider the most recently published standards and practices.

Evidence Generated for the DNP Project

The education program was developed for the nurses working in the outpatient clinical setting where this project took place. RNs and LVNs were included in the education program. After review of the literature and development of the education program, I presented the education program to the nurses working in the chosen healthcare facility. Pretests and posttests measured the nurses' knowledge of medication administration. Test analysis determined the level of learning from the education program. This section includes a discussion of the tests used for the preassessments and postassessments.

Procedures

According to Dubovi et al. (2017), the assessment of nurses' knowledge and competence about medication administration is an important part of any educational intervention aiming to reduce the MAE rate. In line with such considerations, the project adopted the tool, Survey for Nursing Education Programs on Safe Medication Administration (Gonzales, 2010). This tool helped estimate the level of knowledge and preparedness of nurses before and after the educational intervention. The tool has undergone extensive testing. Published results show that the tool is reliable and valid for measuring medication knowledge (Dubovi et al., 2017; Gonzales, 2010). Two envelopes were provided to participants. One was marked as pretest and one marked as posttest. Each envelope had a unique identifier number that was the same for the pretest and posttest folders. After completing the pretest questionnaire, participants were asked to place the questionnaire in the pretest-labeled envelope and place it on their desk.

Subsequently, the educational intervention was provided to participants. Following the intervention, nurses were asked to complete the questionnaire that was provided to them during the initial phase of the project. Each questionnaire had a unique participant identifier. Questionnaires were labeled as either pretest or posttest. Participants were then asked to place the posttest questionnaire in the second separate envelope with their unique identifier written on it. The participants submitted their completed questionnaires in their folder after the posttest was completed. No participant names or employee IDs appeared on the forms. Statistical analysis of the obtained results

helped identify whether the developed and implemented educational intervention had indeed improved the nurses' KSAs about medication administration.

Protections

My project included ethical considerations. Within the scope of the project, the following ethical issues were most relevant. To ensure staff nurse safety and anonymity, I ensured that no information collected could reveal the identity of the staff nurses (e.g., name, address, position). Instead of collecting potentially traceable demographic information, unique identifiers identified the pretest and posttest results.

The project protocol also ensured that the nurses were aware of their right to withdraw from the project at any time. To ensure that the collected data were safe, I stored the obtained information in a single copy on a USB stick drive with a restricted password. The USB device was stored in a locked cabinet in a private office. I was the only person who had access to the data. These measures helped ensure data integrity and privacy.

Analysis and Synthesis

According to Terry (2012), "pretest-posttest designs identify the outcome of interest before the application of an intervention and then after an intervention" (p. 71). I used a comparison of pretests and posttests. The target population for this project was staff nurses who administered medication at the facility.

After obtaining permission from each staff nurse, the pretest was completed using a pen or pencil to write the answers. The staff nurses were asked to place their pretests in their provided uniquely numbered envelopes and to seal them. The education program

was then administered. Afterward, the posttest was distributed among the nurses for completion. Staff nurse participants were asked to place their posttests in provided second-numbered envelopes and to seal them. Then, both envelopes were collected and saved for analysis.

Subsequently, I entered each nurse's response to the pretest and the posttest into Microsoft Excel for statistical analysis. This project adopted statistical analysis using a *t* test to determine whether there was a significant difference between the pretest and the posttest scores.

Summary

The project helped identify key factors that affect nurses' MAEs. In addition, an effective educational program was developed to help nurses reduce their uncertainty and to enhance their knowledge about medication administration. The goal of the education program was to help nurses avoid MAEs in their practice. Use of quantitative techniques helped determine the effectiveness of the developed and implemented intervention. The education program developed and provided to the nurses achieved the goal of improving the nurses' knowledge of medication administration to promote safe medication administration practices.

Section 4: Findings and Recommendations

Introduction

Within the scope of my project, the following practice-focused issues were addressed: (a) identification of internal and external factors that led to MAEs among RNs within the practice setting; (b) development of an education-based program based on the findings; and (c) testing the effectiveness of the developed program within the population of nurse practitioners. The project-developed question helped address the practice gap identified during the literature review, that is, the lack of empirical evidence supporting education-based interventions intended to reduce MAEs tailored to the specific organizational context. The project involved conducting a pretest and posttest intervention with an educational intervention. The intervention was tailored to the specific needs of the healthcare organization among a group of practicing nurses in the practice setting. The pretest offered to the staff nurses was a self-administered survey. The survey was developed to assess the nurses' preparedness for medication administration with the focus on medication reconciliation.

Findings and Implications

In line with the established objectives, the project findings provided insights into the aspects of safety and medication administration, and the relevance of an educational effort within the local nursing staff. A discussion of the project results follows.

Difficulties and Obstacles When Administering Drugs

During the project, nurses reported they encountered many distractions and interruptions during medication administrations. Such findings are in line with empirical

evidence. Evidence suggested that distractions had a negative effect on nurses' ability to focus on their tasks. Distractions had a particularly negative effect on the reconciliation of medications and the safe administration of medications (Donaldson, Aydin, Fridman, & Foley, 2014; Flynn, Evanish, Fernald, Hutchinson, & Lefaiver, 2016; Harris, Pittiglio, Newton, & Moore, 2014; Keers, Williams, Cooke, Walsh, & Ashcroft, 2014).

Flynn et al. (2016) pointed out an important role in organizational culture and work attitudes that relationships play in medication administration safety. In line with such an argument within the practice setting, a number of factors had been identified that could be considered as negative about the culture of safety. In my project, 100% of the nurses reported they felt intimidated and embarrassed to ask for help when they doubted their medication administration steps, pointing out that they were afraid of being held accountable for a mistake or judged by their colleagues or nurse-managers. One of the nurses mentioned that medication administration mistakes were seen as the sole responsibility of individual nurses. The discovery of one or more mistakes resulted in an individual reprimand of the involved nurse (Nurse B) who said:

> This is why we are simply afraid to report such incidents. I do not want to lose my job or be criticized by the manager nurse. So, if I make a mistake or see somebody else making it, I just keep quiet.

According to Jheeta and Franklin (2017) and Harris et al. (2014), group cohesion is one of the most important factors determining relationships and group performance within the nursing context. Within the practice setting, overall group cohesion and comradery were weak, which immediately translated into a culture of fear toward making

a mistake and taking responsibility for it. Harris et al. noted it is pivotal for nurses to share their experiences and to increase general awareness of a particular problem when attempting to combat it. However, within the context of the practice setting, an overall lack of initiative and attention to the issue was observed.

According to three nurses in the practice setting, some steps have been taken within the last five years to address the problem of medication administration safety among nurses. However, no systematic educational steps were implemented to achieve the goal (Nurses A, C, and F). These steps, according to the nursing staff, were not systematic. Harris et al. (2014) highlighted the importance and relevance of systematic and integrative educational approaches that involve different teaching methods and span significant periods (or are repeated at certain periods during each nurse's career).

Designing an Appropriate Educational Intervention for Nurses

Considerations were taken into account when developing an appropriate educational intervention for the practicing nurses in the clinic setting. Considerations included the existing evidence-based body of literature and the results of the surveys conducted with the RNs from the clinic. Raban and Westbrook (2014) reported that systematic educational interventions to help nurses address some of the most common practice-related issues was important and needed. Jheeta and Franklin (2017) noted that team-based exercises and presentations could significantly enhance nurses` understanding of drug administration procedures that includes reconciliations. Hung et al. (2016) pointed out that traditional educational intervention should be complemented by (if not

replaced by) more innovative and efficient solutions such as e-learning programs to reduce MAEs.

In line with the identified problems and the evidence from the nurse surveys, the following complex educational intervention was designed and implemented in the practice setting. The pretest was delivered in a folder which included the consent forms and directions for completion. The folder was presented to the director who handed it over to his manager and explained to her that the nurses needed to complete the pretest after reading the consent form. Participation was voluntary and anonymous. The manager verbalized the understanding and agreed to do accordingly and placed it in a locked drawer for daily distribution. The completed forms were returned to the manager. I am unaware of how the manager proceeded with the distribution. The completed pretest forms from the nurse participants were handed over to facility representatives who, on various days, returned them to me from the locked drawer. The pretests were completed anonymously. No information was collected that would have identified any of the nurse participants. All completed and collected pretests were safely kept in my personal locked cabinet for analysis. After the last pretests were collected, I discussed the presentation intervention date with the site director. The director picked a date when he believed the majority of the staff would be on board. Following that meeting, I sent an e-mail announcing the intervention date. The goal of the intervention, similar to the study of Bonkowksi et al. (2014), was to initiate a dialog about the relevance of the problem within the practice setting.

The second intervention included a lecture in which I used a PowerPoint presentation to address the key rules, risks, and problems related to the issue of safe medication reconciliations and administration. The key element of this session was to engage the nurses in the process of discussing such topics as pharmacology, medication reconciliations, drug administration safety, error reporting, immunization administration process, and verification of orders. On the presentation date, 18 of the 22 staff nurse participants who anonymously completed the pretest, attended the presentation. The site director and owner of the practice setting was present and advised that the sign-in sheet would be used to track attendance. The sign-in sheet documented attendance about how many people were present and helped in comparing the number of posttests that were returned. The presentation was successful. The presentation was appreciated by the site director and his staff. Considerable attention was given to their inputs and suggestions.

The third phase involved the posttest. After the PowerPoint presentation, the consent forms, the evaluation forms, and the posttest were distributed to the nurse participants. They were given instructions on returning the completed evaluation and posttest forms to the director-appointed manager. By the end of following week, I returned and picked up completed posttests and evaluation forms from the manager who called and notified me that the forms had been turned in. The number of forms returned matched the number on the sign-in sheet. The importance of including the consent forms for both the pretest and the posttest was to ensure that individuals who participated in the posttest but did not participate in the pretest were covered, and vice versa. The posttest

was only given to those who were present at the PowerPoint presentation. They were the only ones who were given the opportunity to complete the posttest. Outcomes showered that 22 staff nurse participants completed the pretest. Only 18 staff nurse participants who participated in the pretest also completed the posttest. The results matched the number of staff nurses who attended the PowerPoint presentation.

Educational Intervention Effectiveness Assessment

According to the obtained results, out of the 26 variables scored for knowledge and competency, a significant improvement was observed among practicing nurses before and after the educational intervention (see Table 1 for results). For example, according to the conducted data analysis, the understanding and mastering of percentage medication reconciliations improved significantly ($M = 2.5$ versus $M = 3.6$, $p = 0.00$**). On the other hand, the competency related to the adverse effects and synergism of pharmaceuticals was not significantly changed during the training period ($M = 2.8$ versus $M = .9$, $p = 0.1$; Table 1). These results suggest that improvement of the suggested intervention educational program is needed.

Table 1

Comparison of the Nurses` KSAs in Relation to Medication Reconciliations and Administration Prior to and Post the Educational Intervention

Factor	Mean		P-value
	Prior to intervention	Post intervention	*t*-test significance
Basics of medication reconciliations	2.6	2.8	0.00**
I master elements of reconciliations	2	3.5	0.00**
I master safe performance using at least two patient identifiers	2.5	3.6	0.00**
I master the process of comparing patient medications	2.9	3	0.02
I know the important information needed by clinicians to reconcile patient medications	2.8	2.9	0.1
I master the importance of educating patients on updating their medication records	3	3.5	0.01
I master safe matching of patient and the treatments to such individual	2.5	3.6	0.00**
I master seven rights of medication administration	3.2	3.5	0.02
I can calculate dosages prescribed by the physician	3.2	3.3	0.04
I master the use of facial recognition as one of the identifiers	3.2	3.3	0.01
I master two patient identifiers competency	2.9	3.2	0.00**
I master that one of the identifiers is confirmed patient's address combined with other specific identifications	2.9	3.1	0.01
I master definition of refills, and renew orders	3.2	4.1	0.001
I master solution compatibility with injections and immunizations	4.1	4.4	0.002
I master acceptable identifiers for reconciliations	2.5	3.6	0.00**
I master patient's education of all their meds	3.2	3.5	0.00**
I master safe treatment by verification of orders	2.9	3.2	0.001
I master the skills for medication reconciliations	3.2	3.4	0.00**
I master safe treatment through different routes	4	4.4	0.002
I master the information needed for reconciliations	3.9	4.1	0.01
I know Joint Commission guidelines and national patient's safety goals	3.2	4.1	0.001
I know the challenges faced with reconciliations of medications	4.1	4.4	0.002
Medication administration competency	3.7	4.1	0.01
I can implement follow ups to reduce the negative outcomes related to discrepancies on patient medications	3.9	4.2	0.05
I can monitor the effects of medication during reconciliations	4.1	4.4	0.002
I master the coordination of information with providers regarding patient medications	4.2	4.1	0.01

Overall, the nurses who were surveyed reported enhanced self-confidence in their medication reconciliations and administration skills. They noted that the educational program had a positive effect on their awareness of the problem and on overall group cohesion. Based on my observations, the studied team of nurses became much more open and engaged in the process of discussing the possible sources of medication reconciliations and administration errors as well as opportunities to combat them. Their inputs were noted, including the suggestion made by the facility director to include the community leaders in the future and that such people could be found at health fair centers. It is also necessary to educate stakeholders on sound-alike and look-alike medications, including drug interactions. Nurse A suggested that family members, patients, caretakers, and their aides should be included in the future during in-service training. Nurse B suggested that patients or caretakers should receive an electronic copy of all medications while all active or discontinued meds should be reconciled with the practitioner's copy.

Explanation of Table 1

Table 1 details the measurements related to pretest and posteducation. There are three columns of values associated with each competency. The first column value is the nurses' level of competency before the educational program. The second column value is the nurses' level of competency after participating in the educational program. The third column is a measure of significance. If the *p*-value for a specific competency is between 0.00 and 0.05, it means that the educational program was successful, and nurses' knowledge improved. However, if the p-value is greater than 0.05, it means that the

program did not help to improve that specific competency. Significantly, all but one of the p-values was less than .05.

Recommendations

Based on my project, the first key recommendation concerns the importance of assessing the specific organizational context when attempting to address a practice-based problem. Understanding the context helps to identify the most likely causes of the existing problem. In the case of the practice setting, an overall stigma exists about medication reconciliations and administration errors. The lack of support between nurse team members was one of the factors negatively impacting patient safety. Adhikari, Tocher, Smith, Corcoran, and MacArthur (2014) and Smeulers, Onderwater, Zwieten, and Vermeulen (2014) made an important observation. It is pivotal to recognize and accept that mistakes and errors are an important and unavoidable part of professional routines of nurses. Although such errors cannot be completely eliminated, an effort should be made to reduce and to mitigate them (Donaldson et al., 2014; Moss & Berner, 2015; Keers et al., 2014). However, the basis of an effective intervention toward reducing human error is to eliminate the associated stigma (Adhikari et al., 2014; Donaldson et al., 2014; Jheeta & Franklin, 2017). I argue that it is pivotal for the practice setting and other healthcare organizations to create a climate that encourages sharing and teamwork.

Another key recommendation concerns the importance of creating a systematic educational intervention that can help practicing nurses improve or enhance their

knowledge of safety administration practices. According to Keers et al. (2014), practicing nurses differ significantly in their educational background and professional preparedness. Consequently, it is beneficial for an organization to test the preparedness of its nursing staff and to ensure that the RNs are all at the same high professional level. The developed and implemented intervention demonstrates that nurses overall have a rather low level of knowledge about some of the basic practices and skills concerning medication administration. Implementation of a systematic effort to address this lack of knowledge can significantly improve their perceived level of professionalism about the studied issue.

Project Strengths and Limitations

The strength of the conducted project was its pretest and posttest method approach. This approach allowed the development of an effective educational intervention for practicing RNs. Saunders, Lewis, and Thornhill (2009) discussed such a methodology as an effective way to tackle diverse issues under a pragmatic paradigm. Within the scope of my project, conducting in-depth presurvey and postsurvey interventions with 18 experienced RNs provided access to complex and rich information, including understanding the social context of the phenomenon of medication administration safety (e.g., work culture adopted within the clinic setting, etc.). The survey was an objective quantitative tool that allowed the collection of reliable evidence concerning the overall effectiveness of the developed educational program.

The project only scored and observed the short-term results of the educational intervention (spanning two weeks). This relatively short period can be seen as a major limitation because, according to Keers, Williams, Cooke, Ashcroft, 2013, educational interventions have limited effectiveness and therefore have to be conducted on a regular basis to have a long-lasting effect. Consequently, a follow-up study is necessary to determine the efficacy of the educational program on the long-term ability of the nurses to safely administer medication within the clinic in focus.

Section 5: Dissemination Plan

Dissemination Plan

A goal of the project was to identify the specific barriers and challenges to safe medication administration of medication among registered nurses, to develop an effective educational intervention that addressed the identified issues, and to test the effectiveness of the intervention. The results of the project suggested that different healthcare organizations, where RNs are responsible for medication administration, may benefit from an education program of medication administration and safety. However, the program should be tailored to their specific needs, challenges, and requirements.

In my opinion, it is important to disseminate the results of the project to ensure the obtained knowledge is translated into practice. To accomplish that, I plan to contact a number of the involved stakeholders (senior management staff of the practice setting, and local nurse-educational institutions). I would like to motivate the chosen stakeholders to facilitate adoption of the program. I prepared a presentation and report that illustrated key findings and highlighted the possible benefits of the educational intervention for practicing nurses, patients, healthcare organizations, and the community in general.

Analysis of Self

According to Donaldson et al. (2014), self-reflection is a pivotal element of developing a critical, analytical and independent mindset, necessary within the nurse practitioner occupation. I can say that the conducted project impacted me as an RN in many ways. First of all, the project had an effect on me as a practitioner, by illustrating

the importance of keeping up with theoretical and evidence-based literature while practicing nursing. Conducting the project gave me a unique opportunity to explore my capability as a student and a project manager. Work on my project involved a number of complex steps, including data collection, analysis, and development of implications. I can say with confidence that I have effectively completed all of the important tasks for this project and the experience will have a positive effect on my long-term professional growth.

Key difficulties experienced during this journey were the project design stage, data analysis, and interpretation. The project consisted of multiple interconnected elements. It was very challenging for me to develop a feasible schedule and to collect the data according to it. The part I struggled with the most was data analysis. I had to ask for help from my colleagues to help me understand the necessary steps of the analysis. Finally, when the data were analyzed, I also found it challenging to interpret the findings and to ensure they were connected to the specific context, the studied clinic, and provided a basis for practical implications.

Summary

The project was a successful attempt to link evidence-based knowledge, specific organizational context, and the leadership role of a nurse to develop an effective educational program that tackled a practice-based problem, medication reconciliations, and administration errors. The project results indicate that factors leading to medication administration are dependent on the specific organizational context and work environment, and consequently should be accounted for when developing an effective

solution to the problem. My project also demonstrated that a carefully designed integrated educational intervention could help significantly enhance nurses` capabilities and skills related to safe medication administration, and therefore benefit a wide range of stakeholders including the patients, the practice setting, as well as the wider community.

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Appendix A: Self-Administered Medication Administration Safety Survey

(Developed by Mettiäinen et al., 2014; The Joint Commission, 2017)

Self-Administered Medication Administration Safety Survey

Item					
Basics of medication reconciliations	1	2	3	4	5
I master elements of reconciliations	1	2	3	4	5
I master safe performance using at least two patient identifiers	1	2	3	4	5
I master the process of comparing patient medications	1	2	3	4	5
I know the important information needed by clinicians to reconcile patient medications	1	2	3	4	5
I master the importance of educating patients on updating their medication records.	1	2	3	4	5
I master the safe matching of patient and the treatments to such individuals	1	2	3	4	5
I master seven rights of medication administration	1	2	3	4	5
I can calculate dosages prescribed by the physician	1	2	3	4	5
I master the use of facial recognitions as one of the identifiers	1	2	3	4	5
I master two patient identifiers competency	1	2	3	4	5
I master that that one of the identifiers is confirmed patient's address combined with other specific identifications	1	2	3	4	5
I master definition of refills, and renew orders	1	2	3	4	5
I master solution compatibility with injections and immunizations	1	2	3	4	5
I master acceptable identifiers for reconciliations	1	2	3	4	5
I master patient's education of all their meds	1	2	3	4	5
I master safe treatment by verification of orders	1	2	3	4	5
I master the skills for medication reconciliations	1	2	3	4	5
I master safe treatment through different routes	1	2	3	4	5
I master the information needed for reconciliations	1	2	3	4	5
I know joint commission guidelines and national patients safety goals	1	2	3	4	5
I know the challenges faced with reconciling of medications	1	2	3	4	5
Medication administration competency	1	2	3	4	5
I can implement follow ups to reduce the negative outcomes related to discrepancies on patient medications	1	2	3	4	5
I can monitor effects of medication during reconciliation	1	2	3	4	5
I master coordination of information with providers regarding patient medications	1	2	3	4	5

Appendix B: Literature Search Matrix

Literature Search Matrix

Sources	Databases: Springer Link, Science Direct, Medline, MedPub, Google Scholar Reference lists
Guiding questions	**Search words/ phrases**
What are the key sources of problems and challenges that compromise medication administration safety among nurses?	▪ Medication administration ▪ Medication safety ▪ Medication administration safety ▪ Safety issues/ Obstacles/ challenges ▪ Safety compromise ▪ Administration skills
What are the best organization-wide and individual strategies and interventions to battle such problems and obstacles?	▪ Safety interventions ▪ Minimizing obstacles ▪ Organizational strategies ▪ Individual strategies
How can the discussed strategies and interventions can be integrated into an education program for practicing nurses to improve their medication administration skills and individual confidence level?	▪ Education/ training ▪ Education/ training strategies ▪ Administration skills ▪ Confidence/ competence
What are the most effective approaches to access the effectiveness of the proposed educational project? How can it be scored?	▪ Effective education ▪ Education/ training ▪ Education/ training strategies ▪ Administration skills ▪ Confidence/ competence

Appendix C: Staff Education Program

Enhancing Medication Administration Safety through Education for Staff Nurses

Rita Hawthorne-Kanife

DNP PROJECT : POWER POINT PRESENTATION

Walden University

Medication Errors and Education

- Medication errors present one of the most significant threats to patient safety (Berdot et al., 2016; Gonzales, 2011).
- There exists a need for reliable strategies for minimizing them.
- One approach is the implementation of enhanced education programs for the practitioner.
  - Inadequate training for nursing staff has been associated with high chances of the occurrence errors.
  - Newly registered and inexperienced nurses are at high risk (Blignaut et al., 2017; Dubovi et al., 2017).
- The program should target all practitioners, both experienced and inexperienced.

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Reconciliation

- Among the most effective tools for minimizing errors (Arundel et al., 2015).
- The absence of adequate reconciliation in handoffs is responsible for the high prevalence of medication errors (Arundel et al., 2015).
- Definition: An accurate list of a patient's medications and comparing it against admission, discharge, or transfer orders by their physician to ensure correct medication procedures at every point of transition within a healthcare facility (The Institute for Health Improvement, 2014).
- Reduces errors resulting from incorrect doses and timing, duplication, omission, or adverse effects of drug-disease and drug-drug interactions.
- Information: Name, dosage, route, and frequency of a drug or any other procedure.

Identification

- A reliable method of improving the effectiveness of the reconciliation; an essential National Safety Goal (The Joint Commission 2017).
- Ensures
  - Reliable identification of the target patient for a particular treatment service.
  - The treatment or service matches the person identified.
- Identifiers
  - Patient name, telephone number, identification number, or any other label specific to an individual.
  - Recommended: At least two identifiers (The Joint Commission 2017).

Reconciliation Problems

- Reconciliation remains a challenge for many institutions.
- Issues
  - Difficulties in understanding the prescriptions and medication of a client (The Joint Commission, 2017).
  - Practitioners rarely obtain formal training.
  - Limited research; rely primarily on support and emphasize on high-risk patients (Arundel et al. 2015
- Strategically designed education programs will enhance reconciliation, help reduce medication errors, and improve patient outcomes.

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Reconciliation and Education

- Recent studies have supported the ability of staff training to enhance reconciliation. For instance.
- Meguerditchian et al. (2015) .
  - Focused on undergraduates.
  - Education improved reconciliation, confidence, and competence amongst trainees after an educational intervention.
  - Education had little effects on some
- Education interventions can be valuable in improving reconciliation skills among practitioners (Arundel et al., 2015; Meguerditchian et al., 2015).

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Conclusion

- Medication errors have severe impacts on healthcare quality and patient safety.
- . Inadequate training for the practitioner is a leading cause of the mistakes within healthcare facilities.
- Insufficient reconciliation has been cited as a principal factor.
- The use of accurate identification along with proper education for nurses can help improve the reconciliation and minimize errors.

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ARE THERE ANY QUESTIONS?


Thank you!

APPROVAL OF PRESENTATION

This Educational Presentation was reviewed prior to planned date and Approved by the facility Director